

Assignment 04

Baeuerle & Nusser

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Exercise 1: Operations on B+ Trees

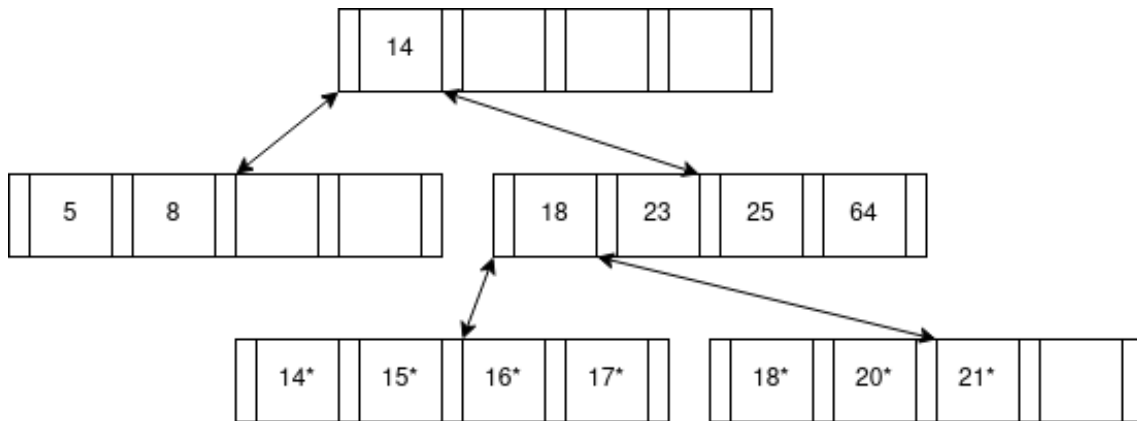


Figure 1: 1a

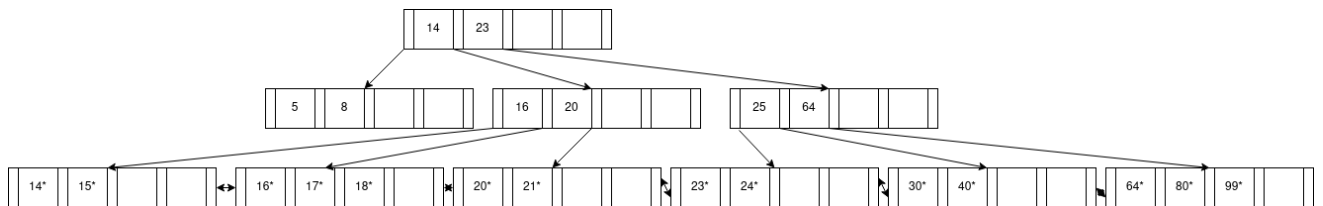


Figure 2: 1b

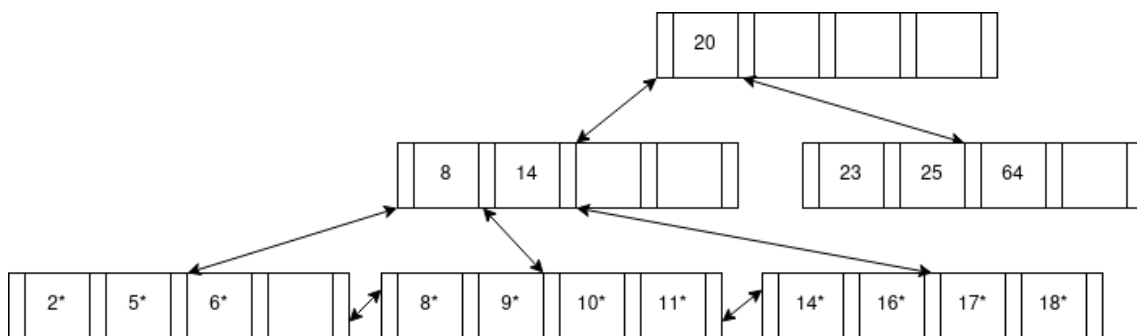


Figure 3: 1c

* Omitted the unchanged branches

Exercise 2: More Fun with B+ Trees

Its a total of 80 Insertions. I did not reach the perfect-half-filled tree ($|root| = 1$ and all other $|nodes| = 2$), however I do not think that is possible with checking the neighbors for redistribution and without reformatting the b-tree completely. The order of insertions performed to get the Tree in Figure 4 are the following:

- insert 31

- insert 35-115

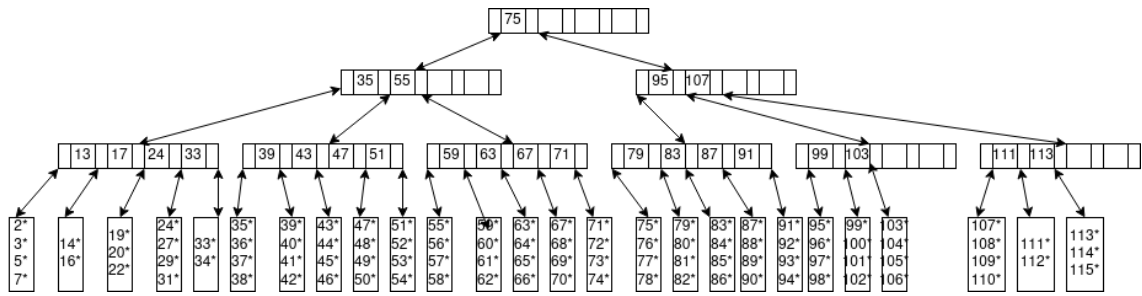


Figure 4: 2

Exercise 3 and 4

Status: containsKey() and insertKey() work as intended, the deleteKey() fails at some point in the testFillEmpty() method. Furthermore, the smallFuzzyTest() also reports an assertion error in the deleteKey() method because the value 3624 should be deleted and the tree size be decreased. However the number didn't get inserted by the smallFuzzyTest routine in the first place. Thus the tree size is not decremented and the test fails. We do not know if this is a bug by the test implementation or on our side - (which it probably is though :D)

Time Spent: Approx: 20 hours per person.